

NASA – Honeywell “Weather Information Network” (WINN) Cooperative Research

NASA and Honeywell have jointly developed a graphical interface for presentation of near real-time weather information for the flight deck in transport category aircraft. The current system provides a color map with pilot selectable weather information. This reduces the need for acquisition of weather data through ACARS, voice or radio. In addition, the ability to see weather anywhere along one's flight path greatly assists in strategic weather planning.

The information can be presented on virtually any Windows[®] compatible display. The interface has been tested and refined in both simulation and flight testing. During late 2000, NASA Langley Research Center flew the WINN system on their experimental B-757 aircraft during their weather test flights. The datalink for the NASA flights was a Skyphone[®] although other datalinks (such as VHF) will permit system operation.

WINN provides a color image of en route weather giving pilots increased situational awareness of weather changes since their departure. Data features include a NEXRAD mosaic, METARs, SIGMETs and TAFs along with current and forecast convection and turbulence. Where desirable, data is presented in a graphical format to reduce pilot workload and enhance weather awareness. For example, graphical SIGMETs can be presented to the pilot directly illustrating on a map the location of activity. This eliminates the need to mentally decode and interpret textual based SIGMETs.

Convective activity can be viewed as it develops; WINN allows pilots to view the last five graphical uplinks, thereby showing both weather direction and storm development. This permits early decision making when having to fly near convective activity. Studies have shown that graphical weather systems can result in as much as a five percent fuel savings. Additionally, en route planning using WINN can assist in avoiding potentially hazardous weather, decreasing distance from major storm cells and providing easy to interpret data to assist the crew in maintaining smooth flight for cabin crew and passengers.

Both Honeywell and NASA will continue studies to enhance and expand the WINN system through late 2002. By 2004, NASA plans flight tests to demonstrate full international graphical weather capability.

A sky-based weather channel is finally here to provide commercial aviation with increased safety, passenger comfort and cost savings!